PATENT ABSTRACTS OF JAPAN

(11)Publication number:

11-284957

(43) Date of publication of application: 15.10.1999

(51)Int.Cl.

H04N 5/93

H04N 5/765 H04N 5/781

(21)Application number: 10-081630

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(22)Date of filing:

27.03.1998

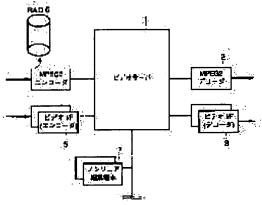
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(54) VIDEO SERVER SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a video server system that quickly edits a resource such as a news resource.

SOLUTION: This video server system stores a plurality of resources to a prescribed storage medium and selects a specific resource on request and is provided with a disk array (RAID) 6 that stores temporarily a video signal as an original resource obtained by photographing and with a nonlinear edit terminal 7 that properly selects a stored original resource, arranges cuts pre- view edited sequentially independently of a time line and displays the result on a display section.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration] [Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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CLAIMS

[Claim(s)]

[Claim 1] The storage for memorizing temporarily the video signal as a original raw material which is the video server system which saves two or more raw materials at the predetermined storage, and takes out a specific raw material selectively according to a demand, and was obtained by photography, The video server system characterized by providing a display means to display on a display the cut by which chose suitably the original raw material memorized by this storage, and preview edit was carried out side by side in order regardless of the time line.

[Claim 2] Said Hara raw material is a video server system according to claim 1 characterized by being a news raw material.

[Claim 3] Said display means is a video server system according to claim 1 characterized by being a non-linear-editing terminal.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] Especially this invention relates to the news bank used at a broadcasting station about a video server system.

[0002]

[Description of the Prior Art] The image and voice which were obtained by the photography in studio or the outside are first recorded on a raw material tape for every scene or cut. Then, the editing task (postproduction) for connecting such an image and voice that were recorded scatteringly and making one program is performed, and that with which edit was able to be managed is recorded on VTR as a raw material for broadcast.

[0003] On the other hand, it does not record on VTR, but many raw materials are memorized to the disk array (RAID) in which random access is possible, and the video server system which takes out a specific raw material selectively and offers it according to a demand is developed.

[0004] <u>Drawing 26</u> shows the raw material edit display of the non-linear-editing terminal as a video server structure-of-a-system element. it is shown in drawing -- as -- the conventional nonlinear software -- if -- he carries out cut edit or was trying to add various kinds of effectiveness, such as wipe and dissolve, by arranging a raw material (V1, a V2:image, A1, A2: voice) in order along with a time-axis (time line) The approach by such time line is suitable when performing trimming of fine adjustment of time amount, and the node of a raw material etc. Generally especially in the postproduction of which advanced edit is required, edit of the time-line base is used.

[0005]

[Problem(s) to be Solved by the Invention] However, in edit of news, in order to connect the cut of news quickly, to unite it and to make it do at broadcast start time, by edit of the time-line base which was described above, there was a problem of it having been complicated and being hard to operate it. [0006] The video server system of this invention is made paying attention to such a technical problem, and the place made into the object is by only putting a raw material in order continuously and performing cut edit to offer the video server system which can perform quick edit, without using the time line.

[0007]

[Means for Solving the Problem] In order to attain the above-mentioned object, the video server system concerning the 1st invention The storage for memorizing temporarily the video signal as a original raw material which is the video server system which saves two or more raw materials at the predetermined storage, and takes out a specific raw material selectively according to a demand, and was obtained by photography, A display means to display on a display the cut by which chose suitably the original raw material memorized by this storage, and preview edit was carried out side by side in order regardless of the time line is provided.

[0008] Moreover, in the video server system which the video server system concerning the 2nd invention requires for the 1st invention, said Hara raw material is a news raw material.

[0009] Moreover, in the video server system which the video server system concerning the 3rd invention requires for the 1st invention, said display means is a non-linear-editing terminal.

[Embodiment of the Invention] Hereafter, 1 operation gestalt of this invention is explained to a detail with reference to a drawing.

[0011] <u>Drawing 1</u> is drawing showing the whole video server system configuration concerning 1 operation gestalt of this invention. The MPEG 2 decoder 2, the MPEG 2 encoder 4, other video I/F 3 and 5, such as Motion-JPEG and DVCPRO, the disk array (RAID) 6, and the non-linear-editing terminal 7 are connected to the video server 1.

[0012] The MPEG 2 encoder 4 encodes video signals, such as inputted NTSC, and outputs them to a video server 1. A video server 1 file-izes this and memorizes it to a disk array 6. Video signals, such as NTSC similarly encoded by other video I/F5, are file-ized by the video server 1, and are memorized by the disk array 6.

[0013] The nonlinear terminal 7 memorizes the image captured from VTR on the disk in which random access is possible, and it performs edit which also adopted effectiveness, such as wipe and dissolve, with the computer base, looking at the image which read the image from this disk and was displayed. The perfect package program (** PAKE) obtained by such edit is memorized by the disk array 6 through a video server 1 through Ethernet. The directions which read a specific program from APC (auto programming control) of the broadcasting station which a video server 1 mentions later read the program concerned from a disk array 6 at the time of a carrier beam. The program by which reading appearance was carried out is decoded by the MPEG 2 decoder 2, and is sent out outside. [0014] All the raw materials for broadcast are memorized by the disk array 6. VTR is also connected to the non-linear-editing terminal 7, the news with which coverage was able to be managed are once accumulated and edited into VTR of the non-linear-editing terminal 7, and the raw material with which edit ended is memorized by the disk array 6 as a raw material for broadcast through a video server 1. [0015] Drawing 2 shows the raw material edit display of the non-linear-editing terminal by the nonlinear software concerning 1 operation gestalt of this invention. This edit display consists of a original raw material window 50, a preview window 51, and a cutting point list window 52. It is chosen as the original raw material window 50 from the raw materials of a large number memorized by the storage section called BIN the original [having taken a photograph] raw material is remembered to be, and is displayed on it in order. By a diagram, a raw material 001 is displayed on the location of 50c, and the raw material 002 is displayed on the location of 50d. If carbon button 50a to a front is clicked, a raw material 002 will move to the location of 50e, a raw material 001 will move to the location which is 50d, and the following image will be displayed on the location of 50c. Moreover, when carbon button 50b to back is clicked, a raw material 002 moves to the location of 50c. A raw material 001 is not displayed. [0016] A preview window 51 is for previewing the raw material of arbitration from the original raw material currently displayed on the original raw material window 50. The preview carbon button 54 is chosen in this condition, and it is To. In To Out A carbon button can be displayed and the Inn point of a raw material and an out point can be set up.

[0017] The raw material which edit ended is arranged in the cutting point list window 52 as shown in drawing instead of a time-line top in order, and is displayed on it. By a diagram, raw materials 001-007 are displayed on the location of 52c-52i in order. if carbon button 52a to a front is clicked -- a raw material 007 -- the location of 52j -- a raw material 006 -- the location of 52i -- a raw material 005 -- the location of 52h -- a raw material 004 -- the location of 52g -- a raw material 002 moves to the location of 52e, and a raw material 001 moves a raw material 003 to the location of 52f in the location of 52d. The following raw material is displayed on 52c. Moreover, when carbon button 52b to back is clicked, with the case where the raw material currently displayed clicks carbon button 52a to a front, it moves towards reverse. Moreover, after choosing a specific raw material, by choosing deletion of a pull down menu from the cutting point edit carbon button 53, a specific raw material can be deleted and between can also be shortened. Moreover, addition of the raw material to the location of arbitration etc. is possible. [0018] Thus, with this operation gestalt, since it was made to perform cut edit by the ability of a cut to

only be continuously stood in a line, without using the time line, especially news edit can be performed promptly.

[0019] <u>Drawing 3</u> is drawing showing the configuration at the time of applying the above-mentioned video server system to the news bank 100. Since what has the same reference number as <u>drawing 1</u> in <u>drawing 3</u> is the same, it omits explanation.

[0020] Although OTC (an one-touch switcher controller)10 is the control terminal which gives the directions about switching to a switcher (equipment for performing a change on an image or performing wipe processing at the time of a change that it should broadcast between two inputted images), it outputs the selection command for choosing the raw material of arbitration from the raw material for broadcast (news raw material) memorized by the disk array 6 through the network 17 for control here. OTC10 consisted of a personal computer, is equipped with the touch-sensitive OTC display, and can display two or more cut raw materials on the screen of this OTC display. The raw material which should be sent out to a main track according to actuation of the TAKE carbon button of a console changes. Moreover, an operator can perform edit of being as inserting this when the raw material which should be sent out immediately is generated **** [and], looking at this OTC display. [replacing the sequence of a raw material l

[0021] APC (auto programming control)11 mainly controls the sending-out timing of raw materials, such as a drama. Contents and time amount to which raw materials, such as a drama, are sent out are programmed beforehand, and are written in the graph on which this is called a cuesheet. APC11 sends out a raw material automatically according to this cuesheet.

[0022] DS (data server)12 stores the data about based on what kind of information APC11 operates. [0023] The report support system 13 is a server for in the case of news, inputting a manuscript or inputting the broadcast sequence of news, and a configuration beforehand. OTC10 decides the news menu which should be broadcast with reference to the data memorized by this report support system 13, and performs actual employment with the TAKE carbon button.

[0024] FPU (field point unit)20 is a unit for incorporating the data obtained by field junction, and immediate memory of the incorporated image is carried out to a disk array 6 by the video server 1. [0025] VTR21 is VTR for memorizing the raw material edited possible [broadcast] unlike VTR connected to nonlinear terminal 7-n.

[0026] The raw material [finishing / edit] memorized by VTR21 is read and mentioned in the control terminal 14 for inclusion (it is hereafter called an inclusion terminal), or it previews by making it display on the preview monitor 15.

[0027] The control terminal 16 for OA (- AIR) (it is hereafter called OA terminal) supervises the raw material under broadcast (- AIR) actually. It has the console for emergencies when OTC10 is downed. [0028] 18 is Ethernet and 19 is Fast Ethernet.

[0029] Below, various kinds of functions of the news bank 100 are explained. First, an inclusion function is explained.

[0030] All raw materials are managed by a raw material id and the broadcast day. The case where a raw material [finishing / edit] is directly recorded on the news bank 100 from VTR21 or FPU20 using the inclusion terminal 14, and the raw material edited by non-linear-editing terminal 7-n may be transmitted to the news bank 100 via a network at inclusion of a raw material.

[0031] First, the sequence of the inclusion from VTR21 by the inclusion terminal 14 is explained with reference to drawing 4. Refer to the inclusion list transmitted from the report support system 13 at the time of inclusion of a raw material (S1) for the news bank 100. Thereby, since id of a non-recorded raw material, a title, and the broadcast scheduled day can be grasped, it records according to a non-recorded list (S2). That is, an operator starts the inclusion to the news bank 100 while he pulls out the head manually and starts VTR21 at the start from the inclusion terminal 14. And S3, S4, S5 which notify the recorded raw material id to the report support system 13 each time. Moreover, the raw material under inclusion is displayed also on the preview monitor 15 while being indicated by overlay at CRT of the inclusion terminal 14. After inclusion termination, modification of a preview and In point of a raw material, and an Out point is possible.

[0032] Next, the inclusion in emergency and the sequence of OA are explained with reference to drawing 5. With the inclusion terminal 14 of the news bank 100, an urgent raw material performs inclusion actuation, and by using a raw material id for example, as the base of No. 9000, the news bank 100 temporary-numbers it to OTC10, and notifies it to it (S11). In OTC10, 9001 is managed so that the urgent coma 1 and 9002 may be called urgent coma 2, and at the time of broadcast (OA), each urgent raw material performs standby and TAKE, without being conscious of a raw material id (S12, S13). If termination of broadcast is received from OTC10 (S14), the news bank 100 will notify inclusion of No. 9001 to the report support system 13. Next, the news bank 100 has the report support system 13 carry out formal numbering of the id of temporary numbering (S15), and the news bank 100 receives the result.

[0033] Next, inclusion of FPU20 and OA sequence are explained with reference to drawing 6. The inclusion terminal 14 of the news bank 100 also performs initiation of inclusion of FPU20, and termination. Also in this case, as No. 8001, the news bank 100 temporary-numbers a raw material id, and notifies it (S21). At the time of broadcast (OA), each FPU raw material performs standby and TAKE, without being conscious of a raw material id (S22, S23). If termination of broadcast is received from OTC10 (S24), the news bank 100 will notify inclusion of No. 8001 to the report support system 13. Next, the news bank 100 has the report support system 13 carry out formal numbering of the id of temporary numbering (S25), and the news bank 100 receives the result.

[0034] Next, a transfer of the raw material from non-linear-editing terminal 7-n is explained. The raw material edited by non-linear-editing terminal 7-n is transmitted to the news bank 100 via a network. In this case, a raw material [finishing / edit] specifies and sends a raw material id. Each time, the news bank 100 notifies the purport recorded to the report support system 13.

[0035] When it sends without specifying a raw material id, it is treated as a common raw material for edit (at the time of raw material retrieval, retrieval by the file name is possible).

[0036] Moreover, at an edit terminal, it can check on CRT of the preview monitor 15 and the inclusion terminal 14 during inclusion from VTR. In the inclusion terminal 14, the die length of the raw material already recorded on the news bank 100 can be doubled with a program frame.

[0037] Next, raw material management is explained. The recorded raw material or the raw material of an inclusion schedule is searched by the raw material id, the title, and the broadcast scheduled day, and the result is displayed. The contents of a display are the head still picture of a raw material, a raw material id, a title, the broadcast scheduled day, raw material length, and the existence of inclusion. The raw material displayed on the retrieval result enables modification of a preview and In point of a raw material, and an Out point.

[0038] moreover, the report support system 13 -- being periodical (one day -- about [1 time]: -- adjustable being possible) -- the list of raw materials which should be deleted is sent to the news bank 100. An applicable raw material is deleted with reference to this list.

[0039] Next, OA (broadcasting) control (OA sequence) is explained with reference to drawing 7. First, a cuesheet is sent to OTC10 and the news bank 100 from the report support system 13 (S31, S32). Then, the news bank 100 creates a play list based on the cuesheet received from the report support system 13 (S33). If OTC10 sends a cuesheet to the news bank 100 again at the time of program standby (S34), the news bank 100 will create a play list similarly based on this (S35).

[0040] Next, OTC10 sends the sending-out channel and raw material id of NEXT to the news bank 100 (S36). Here, the news bank 100 serves as sending-out standby. The news bank 100 receives the sending-out channel and TAKE from OTC10 (S39), and OA starts broadcast. The sending-out channel and raw material id of NEXT are received after it. Henceforth, this actuation is repeated.

[0041] In addition, into OA of a program, the OA terminal 16 of the news bank 100 displays information, such as residual time (HH.MM.SS) of the raw material in the title of a raw material id and a raw material, raw material length (HH.MM.SS.FF), and OA, for every sending-out channel.

[0042] Next, OA sequence when OTC10 is downed is explained with reference to <u>drawing 8</u>. When OTC10 is downed by a certain reason, the console of the news bank 100 can perform NEXT standby for every sending-out channel, and TAKE control based on a play list (S41, S42).

[0043] Next, an example of inclusion actuation using the above-mentioned inclusion terminal 14 is explained. First, in the main menu in the inclusion terminal screen of <u>drawing 9</u>, if the raw material inclusion 50 is chosen from the raw material inclusion 50, the raw material management 51, archive 52, the OA monitor 5, and CLOSE54, it will change to the raw material inclusion screen 59 as shown in <u>drawing 10</u>. An operator chooses the source in which this screen is looked at and mentioned from VTR60, FPU61, and the urgent raw material 62. By the default, it is VTR60. Search of VTR60 is performed manually. After inputting a raw material id63, if the inclusion initiation 64 is chosen, inclusion will start. Moreover, when FPU61 and the urgent raw material 62 are chosen, a raw material id (s) (8001, 9001, etc.) is assigned automatically.

[0044] Moreover, selection of the non-recorded list 67 displays the non-recorded list (non-recorded raw material list) 68 as shown in <u>drawing 11</u>. An operator can choose a desired raw material from this non-recorded list 68. If O.K. is chosen, it will return to the screen of the raw material inclusion screen 59 of <u>drawing 10</u>. The non-recorded raw material chosen when CANCEL70 was chosen is canceled. [0045] While displaying the raw material under inclusion on the monitor 15 for a preview, the screen overlay of it is carried out also to the inclusion terminal 14.

[0046] In the screen of <u>drawing 10</u>, if CLOSE65 is chosen, it will return to the main menu of <u>drawing 9</u>. Moreover, since a preview display as shown in <u>drawing 12</u> will be made if preview 66 is chosen after inclusion termination, it is -1. frame A carbon button (71), +1 frame A carbon button (72), Mark The In carbon button (73), Mark Out A carbon button (74) can be operated and trimming of a frame unit can be performed.

[0047] <u>Drawing 13</u> is drawing showing an example of the screen under inclusion of the inclusion terminal 14. It returns to an inclusion screen head by clicking inclusion termination or the interruption carbon button 75.

[0048] Next, raw material management is explained. A click of the raw material managed carbon button 51 of drawing 9 displays a raw material management screen as shown in drawing 14. A raw material list display is made and a raw material id, a title, the broadcast schedule section, raw material length, and the status (existence of inclusion) are expressed as this screen with the head still picture of each raw material. this screen -- setting -- a part for today -- a click of all the carbon buttons 76 displays all broadcast raw materials today. A click of the carbon button 77 of condition retrieval displays the screen of condition retrieval of drawing 15. A click of the carbon button 78 of a preview displays the screen of a preview. CLOSE If a carbon button 79 is clicked, it will return to the main menu of drawing 9. Moreover, the status [finishing / inclusion] can be changed into un-recording by clicking the right carbon button of a mouse.

[0049] In the condition retrieval screen of the raw material of <u>drawing 15</u>, condition retrieval is performed by inputting a raw material id80, a title 81, the broadcast schedule section 82, and the status (existence of inclusion) 83 as a key. After inputting a key, if the O.K. carbon button 84 is clicked, a retrieval result will be displayed on a raw material management screen. Moreover, if the CANCEL carbon button 85 is clicked, it will return to a raw material management screen.

[0050] <u>Drawing 16</u> is a screen for displaying a raw material list on the inclusion terminal 14, and unifying a raw material (archive). A click of the carbon button 86 of unification initiation starts unification after the display of a check dialog. That is, an identification key example and the archive output to VTR are performed for the raw material for an archive. The raw material chosen when the carbon button 87 of deletion was clicked is deleted from the object for unification. If the carbon button 88 of condition retrieval is clicked, it will become the screen of condition retrieval. After choosing a raw material, if the carbon button 89 of a preview is clicked, a preview screen will be displayed and the trimming of the start point of edit and an ending point will become possible. If the carbon button 90 of CLOSE is clicked, it will return to the main menu of <u>drawing 9</u>.

[0051] Next, OA monitor is explained. In the screen of <u>drawing 9</u>, a click of the carbon button 53 of OA monitor displays the screen of a program list as shown in <u>drawing 17</u>. If the carbon button 91 of broadcast initiation is clicked here, as shown in <u>drawing 19</u>, the information on the program of (92) and NEXT (93) will be displayed on every channel (V1, V2) among OA.

[0052] Moreover, if the carbon button 94 of manual operation is clicked at the time of the down of OTC10, it will change to the manual operation by the console for emergencies after a check dialog display. That is, at the time of the down of OTC10, the TAKE carbon buttons 92a or 92b for each channels are pushed from the console 92 for emergencies as shown in drawing 18. If it stands by for each channel, the raw material concerned will move to "play list of [subsequent]" 96 to V1 output, or V2 output.

[0053] Next, actuation of the non-linear-editing terminal 7 is explained. Drawing 20 shows the main menu of the nonlinear terminal 7. If the carbon button 110 of upload of the raw material to a server is clicked on this screen, the screen of upload of a raw material as shown in drawing 21 will be displayed. In this screen, the ** PAKEFAIRU name 114 and raw material id113 in the nonlinear terminal 7 are specified, the registration carbon button 116 is clicked, and upload is started. When a raw material id113 is unknown, since the screen of a non-recorded raw material list as shown in drawing 22 will be displayed if the non-recorded raw material list 115 is clicked, it checks. Overwrite is checked when the raw material concerned already exists. If the O.K. carbon button 117 is clicked on the screen of drawing 22, it will return to the screen of drawing 21.

[0054] Moreover, in uploading the common raw material before edit to a video server 1, it uploads, without specifying a raw material id113. In this case, although the file name in a video server 1 becomes the same as the file name in the non-linear-editing terminal 7, it will warn, if there is already a file of that identifier, and a file name is changed. Moreover, the uploaded file name is managed as raw material id.avi within a server.

[0055] Next, download of the raw material from a server is explained. In the screen of drawing 20, a click of the carbon button 111 of download of the raw material from a server displays the screen of download of a raw material as shown in drawing 23. In this screen, the ** PAKEFAIRU name 121 and raw material id120 in the nonlinear terminal 7 are specified, the download carbon button 123 is clicked, and download is started. If the CLOSE carbon button 124 is clicked, it will return to the main menu of drawing 19. Moreover, in downloading a common raw material, it specifies and downloads a file name. [0056] Moreover, condition retrieval is possible when a file name is unknown. That is, a click of the retrieval carbon button 122 displays the screen of raw material condition retrieval as shown in drawing 24. In this screen, a raw material id125, a file name 126, a title 127, the broadcast scheduled day 128, and the status 129 can be inputted as a key, and a desired raw material can be searched by clicking the O.K. carbon button 130. Moreover, in downloading a raw material [finishing / edit / already], it specifies a file for a raw material id125.

[0057] <u>Drawing 25</u> is drawing showing the result of condition retrieval. Thus, the head still picture (thumbnail image) 140, a raw material id141, a file name 142, a title 143, the broadcast scheduled day 144, and the raw material length 145 are displayed for every raw material. Download will be started, if a desired raw material is chosen in this screen and the download carbon button 132 is clicked. Moreover, if the CLOSE carbon button 133 is clicked, it will return to the upload screen of a raw material. [0058]

[Effect of the Invention] Since according to this invention a raw material is only put in order continuously and it was made to perform cut edit, without using the time line, the video server system into which a news raw material etc. can be edited promptly can be offered.

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EFFECT OF THE INVENTION

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, in edit of news, in order to connect the cut of news quickly, to unite it and to make it do at broadcast start time, by edit of the time-line base which was described above, there was a problem of it having been complicated and being hard to operate it. [0006] The video server system of this invention is made paying attention to such a technical problem, and the place made into the object is by only putting a raw material in order continuously and performing cut edit to offer the video server system which can perform quick edit, without using the time line.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is drawing showing the whole video server system configuration concerning 1 operation gestalt of this invention.

[Drawing 2] It is drawing showing the raw material edit display of the non-linear-editing terminal by the nonlinear software concerning 1 operation gestalt of this invention.

[Drawing 3] It is drawing showing the configuration at the time of applying the video server system shown in drawing 1 to a news bank.

[Drawing 4] It is drawing showing an inclusion sequence.

[Drawing 5] It is drawing showing the inclusion in emergency, and the sequence of OA.

[Drawing 6] It is drawing showing inclusion of FPU, and OA sequence.

[Drawing 7] It is drawing showing OA sequence.

[Drawing 8] It is drawing showing OA sequence at the time of an OTC down.

[Drawing 9] It is drawing showing the main menu of an inclusion screen.

[Drawing 10] It is drawing showing the raw material inclusion screen of an inclusion terminal.

[Drawing 11] It is drawing showing the screen of a non-recorded raw material list.

[Drawing 12] It is drawing showing a preview screen.

[Drawing 13] It is drawing showing the screen under inclusion of an inclusion terminal.

[Drawing 14] It is drawing showing a raw material management screen.

[Drawing 15] It is drawing showing the screen of raw material condition retrieval.

[Drawing 16] It is drawing showing the screen of a raw material list.

[Drawing 17] It is drawing showing a program list.

[Drawing 18] It is drawing showing the console for emergencies.

[Drawing 19] It is drawing showing a unification screen.

[Drawing 20] It is drawing showing the main menu of a nonlinear terminal.

[Drawing 21] It is drawing showing the screen of upload of a raw material.

[Drawing 22] It is drawing showing the screen of a non-recorded raw material list.

[Drawing 23] It is drawing showing the screen of download of a raw material.

[Drawing 24] It is drawing showing the screen of raw material condition retrieval.

[Drawing 25] It is drawing showing the screen of a retrieval result display.

[Drawing 26] It is drawing showing the raw material edit display of the non-linear-editing terminal using the conventional non-linear-editing software.

[Description of Notations]

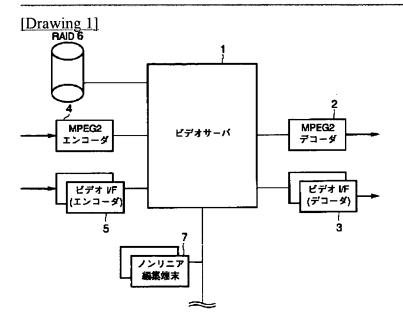
- 1 -- Video server,
- 2 -- MPEG 2 decoder,
- 3 -- Video I/F (decoder),
- 4 -- MPEG 2 encoder,
- 5 -- Video I/F (encoder),
- 6 -- Disk array (RAID),

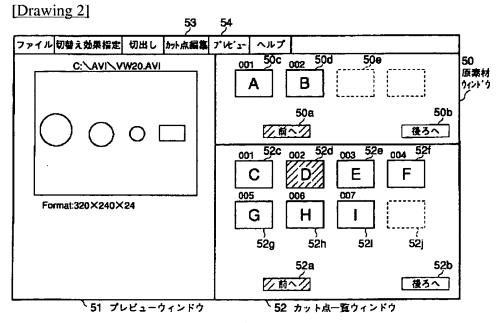
7 -- Non-linear-editing terminal.

JPO and INPIT are not responsible for any damages caused by the use of this translation.

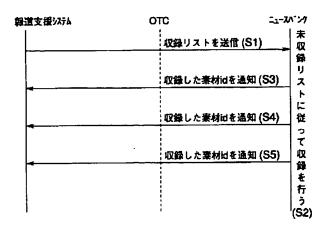
- 1. This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

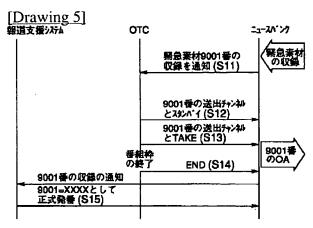
DRAWINGS

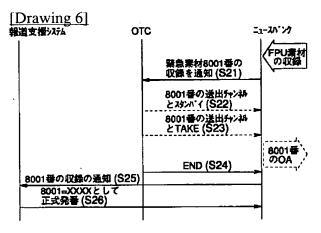


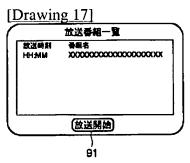


[Drawing 4]

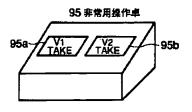


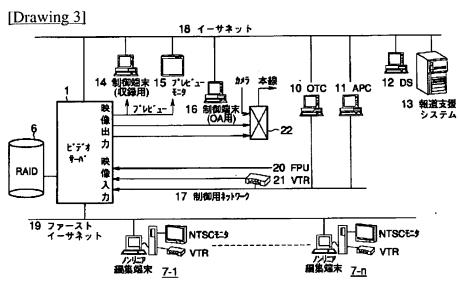


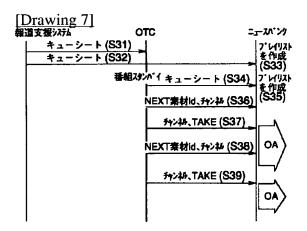


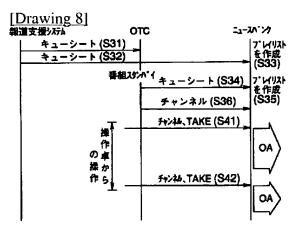


[Drawing 18]

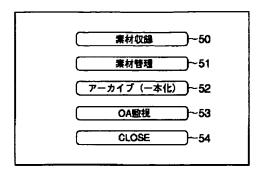


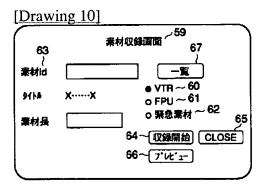


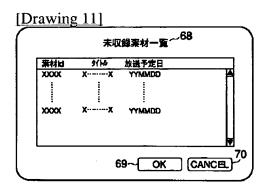


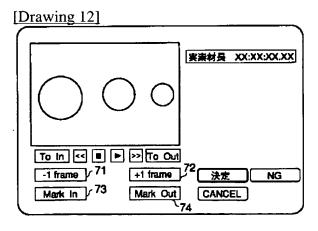


[Drawing 9]

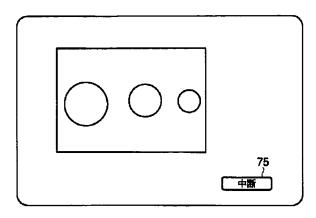


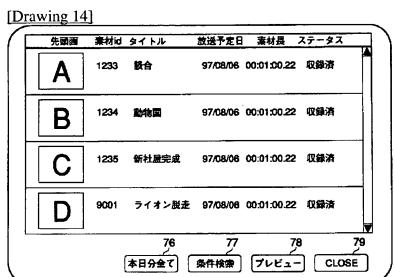


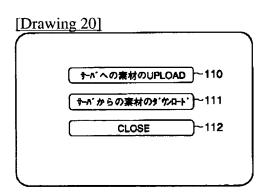


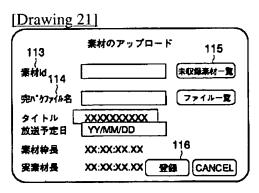


[Drawing 13]

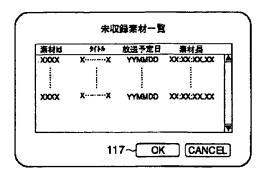


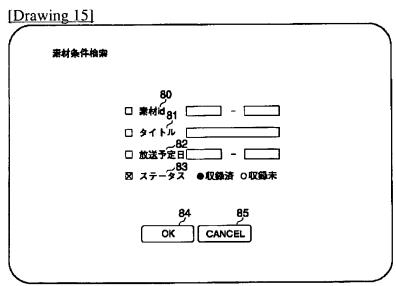


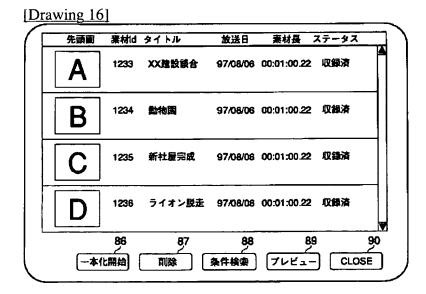




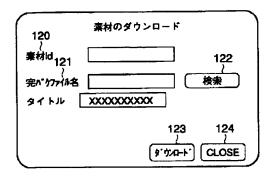
[Drawing 22]

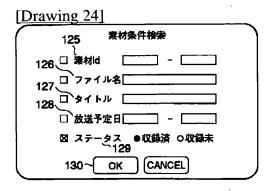


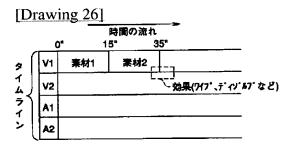


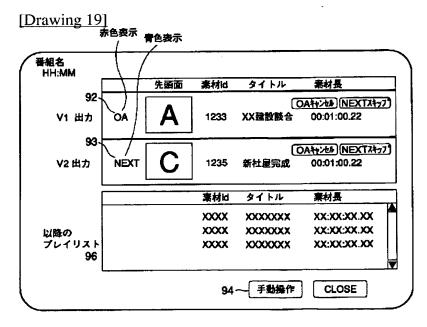


[Drawing 23]









[Drawing 25]

